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April 1964

PHOTOGRAPHIC INTERPRETATION REPORT

URANIUM METAL PLANT
ELEKTROSTAL, USSR

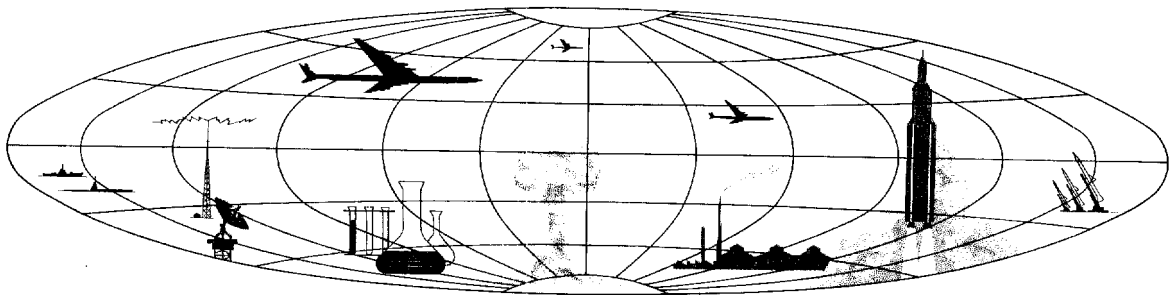
CIA

DIA

25X1

[redacted]

NATIONAL PHOTOGRAPHIC INTERPRETATION CENTER



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URANIUM METAL PLANT, ELEKTROSTAL, USSR

SUMMARY

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Factory 12 in Elektrostal, USSR, is a uranium metal plant. This installation was a World War II munitions plant which was converted to production of metallic uranium and other atomic energy feed materials immediately after the war. A fairly reliable plan of the plant as it existed in 1950 has been provided by [redacted] Current [redacted] photography reveals that considerable expansion of the plant's facilities has taken place since [redacted]

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INTRODUCTION

A uranium metal plant, Factory 12 in Elektrostal, USSR, is located approximately 29 nautical miles (nm) east of Moscow and 4 nm south of Noginsk at 55-47N 38-28E (Figure 1).*

An electrified double-track railroad connects Elektrostal with Moscow. This installation is one of three known Soviet plants producing atomic energy feed materials, the other two being at Glazov and Novosibirsk. 1/ Reportedly, about half of the 1959 output of the Elektrostal plant went into reactor fuel elements and the remain-

*The Bombing Encyclopedia and Target Data Index list this plant under the title *Noginsk Munitions Plant Elektrostal 12* [redacted]

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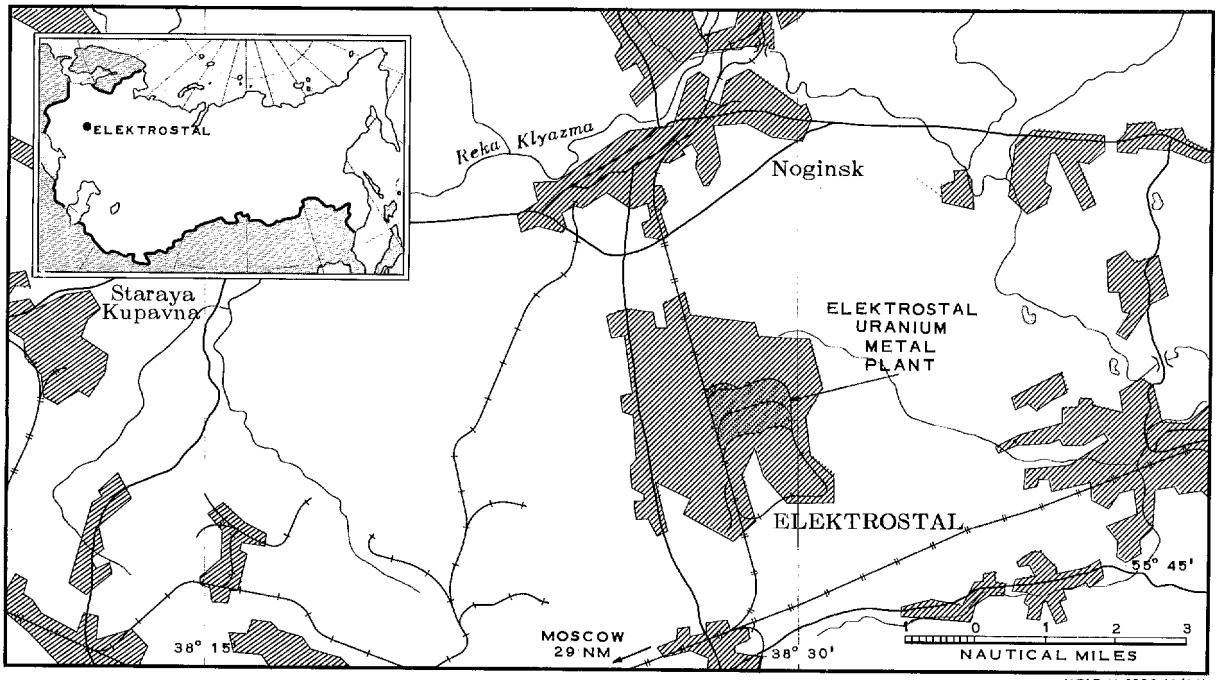

FIGURE 1. LOCATION MAP.

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The Elektrostal installation was a munitions plant during World War II but was converted into a uranium metal plant immediately after the war.

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2/ A plan of the factory published in that report is believed to be a fairly reliable representation of the plant as it existed in . This plan has provided a means of identifying the facilities that existed in on current photography and of evaluating the subsequent growth of the plant.

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A photographic interpretation report on this plant prepared by the was released in 3/ This study was based largely on poor coverage, the latest of which was obtained in The photography nevertheless reveals that considerable expansion has taken place since .

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This report is based on photography of Although photography from both missions is also poor coverage, that of is the best that has yet been obtained. Even on this photography utilities such as power, water, and steam lines cannot be identified.

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The purpose of this photographic interpretation study is to identify the major buildings and other facilities of the plant in order to evaluate changes that have taken place. Findings of general significance are discussed in the body of the report, and the plant is compared briefly with the uranium metal plant at Glazov, USSR. Detailed information about the plant is contained in two tables. Table 1 contains descriptions and dimensions of some 60 items, including identification of approximately 20 buildings and other facilities reported as existing in Table 2 contains detailed information about facilities of the support areas adjacent to Factory 12.

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ELEKTROSTAL URANIUM METAL PLANT

PLANT AREA

Factory 12 in Elektrostal consists of a fenced area measuring approximately 4,900 by 4,750 feet containing approximately 150 buildings and other facilities (Figures 2 and 3).

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the uranium producing portion of the plant was located on the western side of the fenced area. This activity was divided administratively into two major sections, an experimental small plant (Zavod A), item 16 on Figure 2, and a large plant (Zavod B) consisting of several structures of which the main building was item 7. 2/ These two sections are apparently still carrying on their original functions, but plant expansion and increased uranium production seems to have resulted in a shift of the center of operations. A comparison of the plant layout as it existed in with the layout as seen on the latest photography indicates that the center of uranium production activity has moved to a more central location in the plant complex.

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two uranium ore chemical processing buildings and a radium extraction building reportedly were located on the eastern edge of the plant immediately west of the ore receiving warehouses, item 54. 2/ These three buildings are no longer present, and the warehouses appear

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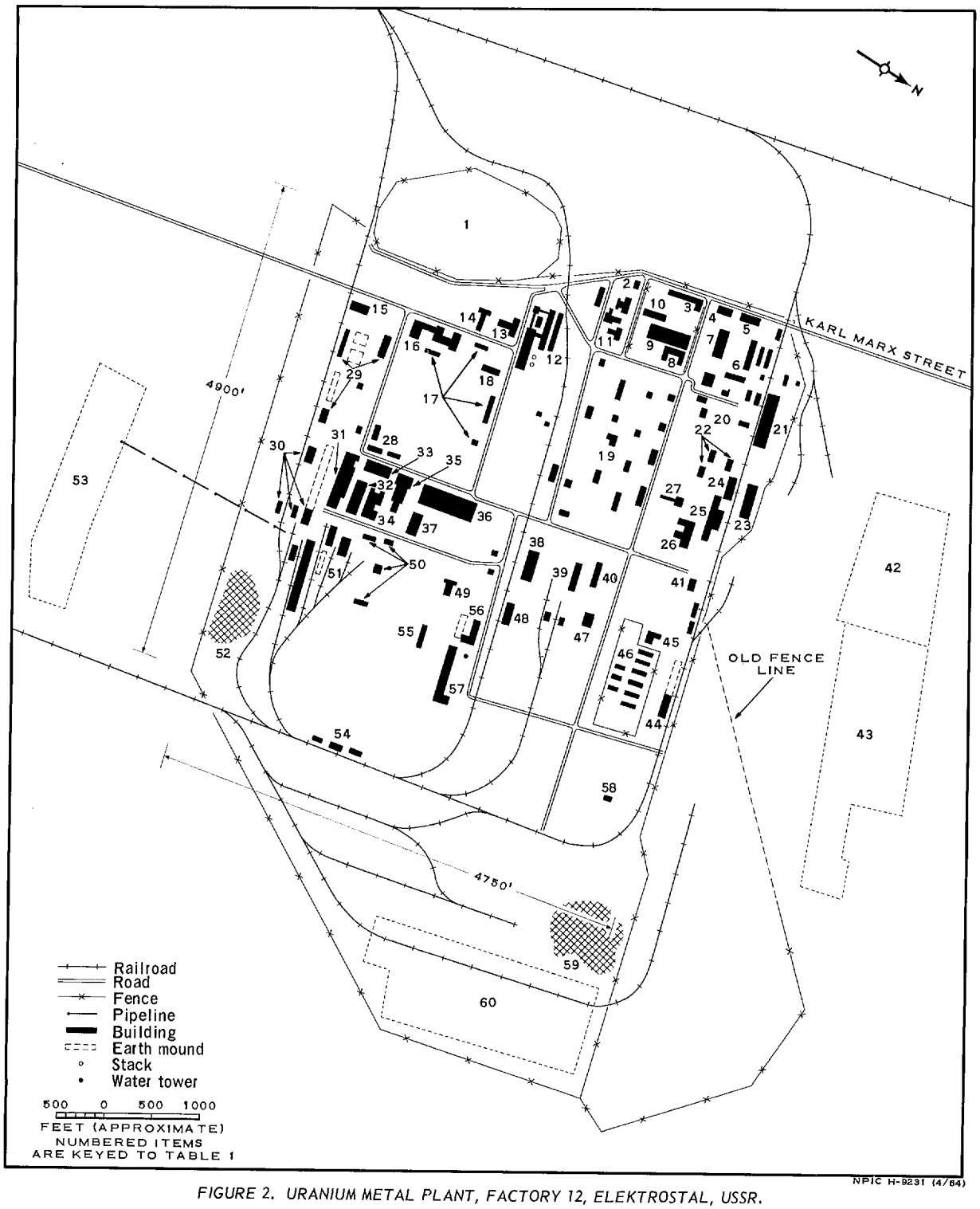

FIGURE 2. URANIUM METAL PLANT, FACTORY 12, ELEKTROSTAL, USSR.

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Table 1. Descriptions of Facilities of Elektrostal Uranium Metal Plant
(Items keyed to Figure 2)

Item	Description	Dimensions (feet)
1	Ash dump; possible combination of ash and tailings	---
2*	Guard building	75 x 50
3	Workshop building; two possible roof ventilators; L-shaped	base: 400 x 65 leg: 65 x 65
4*	Main administration building	175 x 80
5*	Building for extraction of uranium from residues	200 x 80
6	Approximately seven storage buildings; average dimensions	120 x 60
7*	Main building of original large plant (Zavod B)	300 x 100
8	Workshop building; U-shaped	base: 160 x 65 legs, each: 100 x 55
9*	Central mechanical workshop	440 x 155
10	Workshop building	240 x 90
11	Four probable administration/technical buildings; three irregularly shaped; average dimensions	150 x 90**
12*	Steamplant Two adjacent stacks; two coal-heating buildings	370 x 95
13*	Canteen building, T-shaped	bar: 220 x 75 stem: 140 x 60
14*	Special problems laboratory; T-shaped	bar: 100 x 40 stem: 200 x 50
15	Warehouse	175 x 90
16*	Experimental small plant (Zavod A); irregularly shaped	500 x 140**
17	Four support buildings; average dimensions	130 x 50
18	Workshop building	165 x 75
19	Approximately 17 storage/support-type buildings; average dimensions	150 x 60
20	Three support buildings	90 x 45 (each)
21*	Commissary	570 x 155
22	Three support buildings; average dimensions	130 x 55
23	Processing building with small stack	350 x 90
24	Possible processing building with roof ventilators	220 x 100
25*	Ether process plant; irregularly shaped	500 x 135**
26	Possible laboratory building; irregularly shaped	275 x 150**
27*	Central analytical laboratory; T-shaped	bar: 90 x 55 stem: 150 x 40
28*	Three laboratory support buildings	175 x 75 165 x 65 145 x 60
29	Three storage buildings; average dimensions	140 x 90
30	Four possible rare metals extraction and refining buildings	180 x 100 130 x 65 130 x 75 125 x 50
31*	Acid-storage building with longitudinal monitor; irregularly shaped	600 x 175**
32	Chemical processing building; possible small roof stack	340 x 120
33	Chemical processing building with longitudinal monitor	275 x 140

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Table 1. (Continued)

Item	Description	Dimensions (feet)
34	Chemical processing building; irregularly shaped	330 x 165**
35	Chemical processing building; irregularly shaped	440 x 150**
36	Possible crushing and milling building with two longitudinal monitors	620 x 200
37	Support building	220 x 110
38	Probable chemical processing building with roof ventilators	300 x 95
39	Possible chemical processing building	260 x 60
40	Possible chemical processing building	210 x 60
41*	Calcium production building	120 x 65
42*	Athletic field	---
43*	Approximately 24 barracks-type buildings; average dimensions, with approximately 12 support buildings	200 x 65
44	Storage building (dimensions include shed and earth mounding)	570 x 65
45*	Reduction building for producing metallic uranium; L-shaped	base: 125 x 60 leg: 60 x 60
46	Uranium metal reduction and fabricating area; separately fenced; nine or more buildings	185 x 55 (6) 110 x 55 (3)
47	Possible chemical processing building; (possible wings at each end)	150 x 100
48	Probable chemical processing building with possible small stack	240 x 95
49	Possible laboratory building; T-shaped	bar: 120 x 45 stem: 140 x 60
50	Four support buildings	150 x 65 130 x 50 80 x 80 60 x 50
51	Four possible ore receiving buildings	660 x 100 240 x 90 220 x 100 165 x 80
52	New construction activity	---
53	Tailings; area of approximately 25 acres	---
54*	Three ore receiving warehouses; apparently abandoned	[redacted] 25X1D 120 x 70
55	Support building	110 x 60 230 x 45
56	Possible processing building; L-shaped	base: 130 x 55 leg: 55 x 55
57	Processing building with outside water tower and possible stack; L-shaped	base: 55 x 55 leg: 600 x 55
58	Storage building	90 x 55
59	New construction activity	---
60	Old ammunition storage bunkers	---

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*Reported as being present in [redacted] 2/
**Dimensions given of irregularly shaped buildings are greatest length and width.

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FIGURE 3. URANIUM METAL PLANT, FACTORY 12, ELEKTROSTAL, USSR, [redacted] *(Lettered items, which are keyed to Table 2, are support areas outside the secured area of the plant.)*

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Table 2. Descriptions of Support areas and Facilities
(Items keyed to Figure 3)

Item	Description	Dimensions (feet)
A	Storage/transshipping point (11 buildings)	
	Rail-through building with longitudinal monitor	880 x 220
	Rail-through building with longitudinal monitor	240 x 130
	Three buildings with same dimensions	130 x 90 (each)
	Six small support buildings	---
B	Storage area, secured and rail served, containing 20 buildings	300 x 60 (each)
C	Tailings (same as item 53, Figure 2); connected with chemical processing buildings by pipeline	---
D	Power trace (from Noginsk substation)	---
E	Possible maintenance and support area; rail served	
	Four buildings	165 x 45 (each)
	U-shaped building	base: 175 x 40 legs, each: 65 x 40
	Four buildings	90 x 55 (each)
	Several small buildings	---
F	Storage area; rail served; containing eight buildings with an average of 13,000 sq ft of floorspace each	---
G	Seven barracks-type buildings	110 x 65 (each)
H	Open storage area; rail served	
	One building	140 x 65
I	Storage area, rail served, containing several small structures	---
J	Barracks-administration area; fenced	
	Six buildings	250 x 55 (each)
	Two U-shaped buildings	base: 190 x 45 (each) legs, each: 55 x 45 (each)
	Three buildings	110 x 55 (each)
K	Possible storage area	---
	Building	400 x 90
	Several small buildings	---
L	Power trace (from Noginsk substation)	---

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to be abandoned. The functions of the three buildings that have disappeared are now apparently carried on in a group of new buildings (items 30 through 35) in the south-central part of the plant. The tailings dump (item 53) south of the plant apparently did not exist in [redacted] The ash dump (item 1) on the western edge of the plant is suspect as a combination of both ash and tailings.

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An L-shaped building (item 45) in about the middle of the northern edge of the plant area reportedly was an ore reduction building for producing uranium metal in [redacted] 2/ The function of this building has apparently been transferred to approximately nine buildings in an adjacent, separately fenced area (item 46). At least two of the nine new buildings are apparently capable of housing electric reduction furnaces. Power traces lead to this area, but substations cannot be identified because of the small scale of the photography. Laboratory-type operations and the canning of uranium slugs may take place in other buildings of this separately fenced area. Also in the north-central part of the plant is a

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structure (item 41) that reportedly was a calcium producing building in [redacted] 2/ this building is still present but apparently not in use. A processing building (item 23) is now suspect as a calcium production facility.

Another activity related to atomic energy at Factory 12 has been the manufacture of barriers for gaseous diffusion plants. 2/ This activity may take place in the old central mechanical workshop building (item 9) and three workshop buildings (items 3, 8, and 10). This group of four buildings is in an area on the western edge of the plant adjacent to the main street of Elektrostal (Karl Marx Street). A board fence partly surrounds this area which is flanked on the south by four probable administrative/technical buildings (item 11).

Descriptions and dimensions of the principal buildings and facilities of the plant area are presented in Table 1 in which the item numbers are keyed to Figure 2.

SUPPORT AREAS

A number of support areas and separate support facilities are located immediately outside the secured plant area of Factory 12 (Figure 3). Of particular interest are the uranium ore storage warehouses (item B, Figure 3), which are rail served.

Electric power ample for Factory 12 is available from the Noginsk substation, which is located about 2.5 nm north of the plant. The small scale of available photography precludes identification of utilities.

Detailed descriptions and dimensions of the support facilities are presented in Table 2 which is keyed to Figure 3.

COMPARISON WITH THE GLAZOV PLANT

Factory 12 in Elektrostal constituted the pilot plant for production of uranium metal in the USSR. The Glazov uranium metals plant 1/ shows evidence of experience gained at Elektrostal.

When the Elektrostal and Glazov plants are compared, the Glazov plant appears to have functionally a more efficient arrangement of facilities. The processes used appear to be the same as at Elektrostal, and the end products are also the same: canned uranium slugs and uranium hexaflouride. Of the three plants producing uranium metal, the Elektrostal plant produces the least.

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REFERENCES

[redacted]

MAPS OR CHARTS

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2. CIA. OSI-Z-PR/60-1, *Factory 12, Elektrostal, USSR; Uranium Metallurgical Operations*, [redacted] 24 Mar 60 (SECRET)

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REQUIREMENT

CIA. OSI/C-SI4-81,128

NPIC PROJECT

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